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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,168

11/12/2003

Stephen D. Allen

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10/13/2005

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EXAMINER

MENON, KRISHNAN S

ART UNIT

PAPER NUMBER

1723

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,168

Applicant(s)

ALLEN ET AL.

Examiner

Krishnan S. Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-14, 16-34 and 36-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-14, 16-34 and 36-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-8,10-14,16-34 and 36-39 are pending in the RCE of 9/6/05

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 28,29 and 34 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite that the inflow of the wastewater will be equal to the outflow of the treated water. This is not possible under steady state conditions, because there is no material balance for the water in the process. Applicant discloses that part of the water goes with the solids as bound and unbound water. Therefore, the water balance in the process, volume of water inflow in the wastewater = volume of water in the treated water + volume of water in the solids (bound and unbound).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-8, 10-14, 16-19, 21-34 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bladden et al (US 5,560,831) in view of Allen et al (US 6,428,705)

Claim 1: Bladden teaches a method of removing suspended and dissolved material from a fruit and vegetable wastewater (col 1 lines 7-16) comprising adding a coagulant polymer to form coagulant particles (col 5 lines 40-50), synthetic organic polymer. Bladden teaches 'microfiltration as a conventional (known process) for the separation of solids from wastewater.

Re the particle size of the solid particles, this would be inherent, since the reference teaches using the inorganic polymers and DADMAC as the coagulating polymers, and the wastewater has the same source. Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986).

Allen teaches a process of treating food processing wastewater (column 2 lines 35-40) by coagulating with inorganic polymers such (Al and Fe salts) and DADMAC or epi-DMA to obtain particles of size greater than 10 or 50 μm , and then microfiltration as claimed (abstract, column 4 lines 43-57 and column 6 lines 17-60). It would be obvious

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to one of ordinary skill in the art at the time of invention to use the teaching of Allen in the teaching of Bladen because Allen teaches that microfiltration process can be made continuous and fully automated, for processing large volumes of wastewater.

Claims 2 and 3: Coagulant is aluminum (+3) compounds (col 5 lines 40-50)

Claim 4 adds the further limitation of ferric chloride or sulfate as the coagulant, which is not taught by Bladden. Allen teaches ferric chloride and aluminum salts in column 4 lines 43-57. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Allen in the teaching of Bladen to have the desired particle formation as taught by Allen.

Claim 7: acidity and basicity of the polymer depend on pH – inherent, applicant uses the same chemicals as in the reference – In re King.

Claim 8: coagulant added between 50 – 200 ppm (col 5 lines 60-67)

Claim 10: DADMAD, etc – col 6 lines 1-18

Claims 11, 12: epi-dma and mol wt are taught by Allen column 6 lines 17-60.

Claim 13: ratio of polymer to coagulant is from 5:1 to 25:1 – see col 5 line 60 – col 6 line 18.

Claim 14: synthetic organic polymer from 10-50 ppm – col 6 lines 1-18

Claim 19: adjust pH – col 6 lines 40-51

Claims 5 and 6 add the further limitations of coagulant being added on the basis of TSS, BOD and COD; and the amount is determined by the equation presented.

Bladden in view of Allen does not teach all such details. However, it would be obvious to one of ordinary skill in the art at the time of invention that the amount of coagulant to

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be added depend on the concentration of the waste materials in the fluid to be treated, and can be optimized; COD, BOD and TSS being just the ways of expressing the concentration. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955).

Claim 16 adds the further limitation of dwell time between 5 and 30 minutes, which is also optimizable depending on the process flow rate and the concentration of the contaminants – In re Boesch and Slaney. Allen teaches dwell time of 10 min in examples.

Independent Claim 21 adds, over claim 1, the further limitations of adding a wastewater tank (Bladden – abstract, figures; also taught by Allen), determining the BOD, COD, etc (implied in the references: one would determine the BOD, COD, etc before adding the required amount of the chemicals. “[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976).), adding the chemicals to the tank, the equation for determining the amount of coagulant (optimizable – In re Boesch and Slaney), molecular weight of polymer and specific definable controllable particle size are inherent in the ref (applicants use the same

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chemicals in the same process), ratio of coagulant to polymer 5:1 – 25:1 (col 5 line 60 – col 6 line 18).

Claim 22: aluminum +3 – col 5 lines 40-50

Claim 23: DADMAC, etc – col 6 lines 1-18.

Claims 17 and 18 add polypropylene filter membrane and the flow from outside-in for the membrane, which is not taught by Bladden. Allen teaches polypropylene membrane and outside-in flow (examples). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Allen in the teaching of Bladden for large volume treatment (see Allen abstract).

Claim 24: Independent Claim 24 adds the further limitations of a tank and a settling process and continuous filtration through a filter membrane in addition to the limitations of claim 1, which Bladden does not teach. Allen teaches settling process and filtration through filter membrane (column 10 lines 9-16 and figure). Gravity settling can inherently happen in the process at the filtration vessel as taught by Allen.

Claim 32: Independent claim 32 adds further limitations to the limitations of claim 1. A tank is taught by both references as above. The limitations of Al+3 etc as the coagulants, DADMAC, etc as the polymers, continuous stream and filter membrane are taught by Bladden in view of Allen. Bladen in view of Allen does not teach solid particles collected on the membrane as forming a separate filter, and the flow through the membrane not being significantly reduced. However, it would be obvious to one of ordinary skill in the art at the time of invention that this would be inherent in the process because the references use the same membrane and the same process – In re King.

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Also, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d, 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Claim 25: Al+3 based coagulant – see Bladden col 5 lines 40-50

Claim 26: DADMAC etc – Bladden col 6 lines 1-18

Claims 27, 33: dwell time is optimizable as explained in claim 16, and Allen teaches it in the examples.

Claims 28,29 and 34: flow rates of wastewater and treated liquid/solution are equal – optimizable by process flow rates and material balance – *In re Boesch and Slaney*.

Claim 30: solid particles collected on the filter membrane would act as a separate filter and filter out other particles – see claim 32 above..

Claim 31: Flow outside-in – see Allen figures.

Claims 36 and 37: less than 3% bound water is inherent property of the flocs generated by the coagulant used and the contaminant in the water. Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. “There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102.” *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims

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claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.

Claims 38 and 39: microfiltration pressure <24 psi – see Allen abstract.

- 2. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bladden et al (US 5,560,831) in view of Allen (705) as applied to claim 19 above and further in view of Rawlings et al (US 4,144,355)

Claim 20 adds the further limitation of adjusting pH with MgO, which Bladden in view of Allen does not teach. Rawlings teaches adjusting pH with alkali or alkali earth metal hydroxides (Mg-hydroxide is alkali earth metal hydroxide) as equivalent. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Rawlings in the teaching of Bladden in view of Allen to use MgO to adjust the pH because it is an obvious equivalent to NaOH as taught by Bladen in view of Allen.

3. Claims 1-8, 10-14, 16-19, 21-34 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al (US 6,428,705) in view of Bladen et al (US 5,560,831).

Allen teaches a process of removing suspended solids from agricultural and food processing wastewater by adding inorganic coagulant polymer, such as Al or Fe compounds having +3 charge, or polyaluminum chloride, and synthetic organic polymer such as DADMAC or epi-dma of mol wt 5000-1,000,000 (column 43-57, examples) to obtain solid particles of size 10 or 50 μm and then passing through microfiltration to

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separate the solids particles from the wastewater (column 6 lines 33-44). The type of coagulant added depend on the pH (examples) and the amount of coagulant is based on the TSS, BOD and/or COD as claimed (examples, column 2 lines 35-35; see examples for the actual concentrations). Dwell time – see example 9. Polypro filters as claimed, outside-in flow – examples. Adjusting pH – examples. Reaction tanks – see figures. The process can be continuous – column 6 lines 17-32. The process inherently will have no significant reduction in flow rate – same process as described by the applicant, and for the steady state process, the inflow of untreated water will be about equal to the outflow of treated water, except for the water retained by the solids.

With respect to the settling step in claims 24 and 32, Allen teaches the sludge settling in the filtration vessel in column 10 lines 9-16.

The instant claims differ from the teaching of Allen in the recitation of the vegetable wastewater. Allen teaches food processing wastewater but not specifically vegetable wastewater (column 1 lines 1-17, abstract). Bladen teaches treating vegetable wastewater in a similar way with polymeric coagulants and then filtration or settling process. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Bladen in the teaching of Allen for treating vegetable wastewaters as taught by Bladen, for the continuous process as taught by Allen (column 6 lines 16-32).

Claims 36 and 37: less than 3% bound water is inherent property of the flocs generated by the coagulant used and the contaminant in the water. In re Best.

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Claims 38 and 39: low pressure membrane and operating pressure less than 24 psi – column 4 lines 1-11 and abstract of Allen.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen'705 in view of Bladen et al (US 5,560,831) as applied to claim 19 above and further in view of Rawlings et al (US 4,144,355)

Claim 20 adds the further limitation of adjusting pH with MgO, which Allen in view of Bladen does not teach. Rawlings teaches adjusting pH with alkali or alkali earth metal hydroxides (Mg-hydroxide is alkali earth metal hydroxide) as equivalent. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Rawlings in the teaching of Allen in view of Bladen to adjust the pH for the formation of a gel containing the suspended solids as taught by Rawlings (col 3 lines 21-37), because they are obvious equivalents.

Response to Arguments

The arguments presented on 9/6/05 are moot because of the new grounds of rejection.

In response to the argument that Bladen teaches forming a viscous sludge in col 6 lines 58-62, the cited paragraph does not talk about viscous sludge. More over the high mol wt of the polymer used by Bladen is only conjecture on applicant's part; Bladen does not have any specific teaching of mol wt. Bladen also teaches using DADMAC.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K S Menon', written in a cursive style.

Krishnan S. Menon
Patent Examiner
10/10/05